

## XI. TWO NEW SUBSPECIES OF *MELITÆA HARRISI*, WITH REMARKS UPON RELATED FORMS.

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(PLATE VI).

Early in July, 1927, three specimens of *Melitæa* closely related to *M. harrisi* Scud., were obtained by me in Cook Forest. The next year about the same season two more females of this butterfly were captured. I delayed describing this form until I might obtain a male specimen in order to make a full comparison with *M. harrisi*. Through the kindness of Mr. S. Weadner, I have been fortunate in being able to examine two males undoubtedly belonging to the same form. They were captured at Slippery Rock, Pa., at the end of June, 1928, together with several females identical with the specimens from Cook Forest. Mr. Weadner has kindly donated one of these males to the Carnegie Museum.

### 1. *Melitæa harrisi liggetti*, subsp. nov. (Pl. VI, ff. 4-7)

The butterfly has a larger expanse of wing than the usual run of *M. harrisi* Scudder from New England and New York. The fore wing of the male measured on the costa has a length of 20 mm., somewhat exceeding the average length of *M. harrisi*, ♂, indicated by Scudder. The fore wing of the female, measured in the same way, exceeds that of the largest specimens of *M. harrisi*, the maximum size of which is given by Scudder as 21.5 mm. The length of the fore wing of the females of the subspecies which I am describing is 24 mm.

*Upper side:* The main characteristic of this new subspecies is the strong development of the dark areas on both wings, which may be described as being very dark fuscous (almost black), with a relatively narrow fulvous median band on both wings, succeeded outwardly on the fore wing by a series of fulvous intraneural round spots and on the hind wing by a band of lunular markings. These series of markings are separated by a distinctly dark fuscous area, which in typical *harrisi* is only faintly indicated, the fulvous ground-color predominating over the whole median area of the front wings, and being broadly extended over the larger part of the surface of the hind wings. The basal half of the wings in the new subspecies has the usual maculations of *harrisi*, but somewhat obscured and reduced in size. The male and female match each other in their characters, except that the fulvous

markings of the male are uniform in tinge tending toward orange-brick, while in the female the median band of markings of the hind wing is a trifle lighter inclining to yellowish. Owing to this lighter coloration of the median band and its narrow expanse on the hind wings of the female, this sex shows a superficial resemblance to the hind wings of the aberrant female of *M. palla* Behr, to which Wright has given the name *eremita*, from which, however, the present form is widely differentiated in other respects.

*Under side:* On this side *M. harrisi liggetti* agrees well with *harrisi*, except that the basal half of the fore wings is more heavily marked than is the case in *harrisi*, in the majority of specimens of which this part of the wing is frequently devoid of all dark markings, being uniformly fulvous. However, this is not a stable characteristic, as some specimens of *M. harrisi* show almost as well developed transverse marking in this part of the wing as in the specimens of the new form. The antemarginal band in the male is dark, being suffused with dark scales, which are not so pronounced in typical *M. harrisi*. Expanse: ♂, 40 mm.; ♀, 42-45 mm.

I take pleasure in dedicating this new subspecies of *M. harrisi* to Mr. Thomas Liggett, the indefatigable advocate of preserving the Cook Forest as a public park, in which endeavor he finally succeeded by rallying wide public support to the undertaking. *M. harrisi liggetti*, the recently discovered inhabitant of the splendid primeval forest, which Mr. Liggett has helped to rescue from the axeman, preserving it for all time as a recreation ground for the people of Pennsylvania, by its name will perpetuate the memory of his self-sacrificing exertions.

The new subspecies is the southernmost representative of typical *harrisi*, which has its habitat in the northeastern states and the southern part of Canada ranging approximately between 42° and 50° of north latitude. It represents a southwestern extension of the range of the species in western Pennsylvania. Scudder in his classical work on "The Butterflies of New England," mentions that Mr. Charles Dury obtained a specimen of *M. harrisi* in the neighborhood of Cincinnati, Ohio. However, Dr. Scudder expressed doubt as to the correctness of the identification of the butterfly listed by Mr. Dury. In order to clear up the matter I corresponded with Mr. Dury, who most obligingly made every effort to verify the record, but was unable to locate the specimen in question. It is probable, however, that the new race will be found in other localities in western Pennsylvania, and possibly in southern Ohio.

The male of *M. harrisi*, figured in the book of John H. and A. B.

Comstock entitled "How to Know the Butterflies," Pl. 22, fig. 5, is somewhat darker than typical representatives of the species. However, the development of the brown-black pattern does not reach the intensity and extent observed in the subspecies *liggetti*; that is to say, the median dark band dividing the two rows of fulvous markings on the hind wings is very faintly indicated so that the fulvous ground-color of the two bands flows together to a considerable extent. A specimen of *M. harrisi* displaying the under side in fig. 8 of the same plate is less heavily marked with brown-black than in the new race. The provenance of the specimen figured by Comstock is not indicated, but it may be inferred that it came from some place in New England in view of the remark made in the text: "It is a New England species, seldom being found south of the 42d degree of latitude." The specimen of the male of *M. harrisi* figured in The Butterfly Book of Dr. W. J. Holland, Pl. XVII, fig. 5, is a fair example of typical *harrisi*, corresponding closely with the average run of specimens of that species, exhibiting a greater expansion of the fulvous coloration of both wings than the specimens figured by Comstock. The butterfly photographed in colors in Dr. Holland's book has moreover a decidedly more accentuated development of the antemarginal row of markings in both wings. The under side of *harrisi* shown by Holland on the same plate, fig. 6, is not as heavily marked with brown-black as is the subspecies *liggetti*.

2. *M. harrisi albimontana* subsp. nov. (Pl. VI, ff. 8, 9)

Specimens of *M. harrisi* from New Hampshire and Canada reveal an opposite tendency to what is observed in the material obtained in western Pennsylvania. A series of examples from Peterboro, N. H., in the Carnegie Museum and a specimen from the White Mountains in the Holland Collection (the latter selected as the type) are all uniform in showing a reduction in the intensity and development of the dark bandings. The fulvous ground-color predominates on the surface of both wings. The marginal bands are narrow. The restriction of the dark pattern is especially marked on the hind wings, which only show traces of the fuscous pattern usually heavily accentuated in typical *M. harrisi*. The question of the stability of this form over a wide area awaits the acquisition of more material, but the individuals, which we have studied, suggest a subspecific designation for this race, which I name *Melitæa harrisi albimontana*.

In the Proceedings of the Royal Society of Canada, Vol. IX, Section 4, 1902, p. 207, James Fletcher described *Phyciodes hanhami*,

which he compares with *P. nycteis* and *Melitæa harrisi*, pointing out as the main characteristic: "The absence on the secondaries of the median black line, which in those two species divides the fuscous discal area on almost all specimens." The description was based on twelve specimens, six males and six females, from Manitoba and Minnesota. The types of both sexes are deposited in the United States National Museum at Washington. Fletcher accompanies his description by colored figures of the upper side of the male and the under side of the female.

Arthur Hall in his "Revision of the Genus *Phyciodes*," published as a supplement to the Bulletin of the Hill Museum, Vol. II, 1928, tentatively regards *hanhami* as a race of *harrisi*, referring the species to the genus *Phyciodes*. He says: "I have not seen this form and am not quite sure whether it belongs here or to *P. nycteis*. Hall is justified in his hesitation to make a generic reference inasmuch as *hanhami* forms a perfectly intermediate link between the *harrisi* group of *Melitæa* and the *nycteis* group of *Phyciodes*, in fact at this point both genera appear to merge into each other showing scarcely any sufficient generic distinction to separate them. The neururation of these two groups reveals substantial similarity and the formation of the palpi does not provide a valid basis for keeping the two genera apart.

A comparison of three specimens of *hanhami*, most obligingly loaned to me by Dr. J. D. McDunnough from the Canadian National Collection at Ottawa, shows that superficially they resemble *Melitæa harrisi albimontana*. The resemblance is restricted to the upper side. The under side is different. The species *hanhami* possesses a complete row of silvery white antemarginal lunules, like the one found in the genus *Phyciodes*. These lunules in *Melitæa harrisi albimontana* are not silvery but dull yellowish, less conspicuous than in typical *M. harrisi*. The dark markings of the under side of the hind wing in *hanhami* are extremely attenuated. The dark band between the outer lunular row and the median light band being scarcely indicated, except at the costal border of the wing. *M. harrisi albimontana* is doubtless an extremely light form of *M. harrisi*, which does not show any special difference on the under side of the wings, and is practically identical with the typical form, save that the central part of the front wings and the basal part of the hind wings is lighter than in typical *M. harrisi*.

In conclusion it may be observed that the American butterflies

of the genus *Melitæa* have not been as thoroughly studied as those of Europe and it is possible that there may exist other subspecies worthy of being characterized. In the Old World recent monographers have set up many minute differentiations in recognized species. This is especially true in the case of *M. didyma*. However, many of the characters assigned to these subspecies by European writers are so indefinite and elusive that the correct identification of the new forms is exceedingly difficult.

## EXPLANATION OF PLATE VI.

- Fig. 1. *Melitæa harrisi* Scudder, ♂ (typical).  
Fig. 2. *M. harrisi* Scudder, ♀ (typical).  
Fig. 3. *M. harrisi* Scudder, ♂, under side (typical).  
Fig. 4. *M. harrisi* var. *liggetti* Avinoff, ♂ (type).  
Fig. 5. *M. harrisi* var. *liggetti* Avinoff, ♀ (allotype).  
Fig. 6. *M. harrisi* var. *liggetti* Avinoff, ♂, under side.  
Fig. 7. *M. harrisi* var. *liggetti* Avinoff, ♀, under side.  
Fig. 8. *M. harrisi* var. *albimontana* Avinoff, ♂ (type), from White Mountains.  
Fig. 9. *M. harrisi* var. *albimontana* Avinoff, ♂, under side, (paratype), from Peterboro, N. H.  
Fig. 10. *Phyciodes hanhami* Fletcher, ♂, from Aweme, Manitoba.  
Fig. 11. *P. hanhami* Fletcher, ♀, from Aweme, Manitoba.  
Fig. 12. *P. hanhami* Fletcher, ♂, under side, from Aweme, Manitoba.  
Fig. 13. *Phyciodes tharos* (Drury) ♂. Agrees with Drury's figure.  
Fig. 14. *P. tharos* (Drury), ♀, under side.  
Fig. 15. *P. tharos* var. *marcia* Edwards, ♂, (typical).  
Fig. 16. *P. tharos* var. *marcia* Edwards, ♀, under side, (typical).  
Fig. 17. *P. nycteis* (Doubld. & Hew) ♂.  
Fig. 18. *P. nycteis* (Doubld. & Hew) ♀, under side.

Specimens represented by figures 1-3 are from Massachusetts.





*Melitaea* and *Phyciodes*.  
(For explanation see opposite page)